
CITY OF BERKELEY
BERKELEY TRUCK ROUTE STUDY

FINAL REPORT

June 1985

DKS Associates

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CHAPTER I RECOMMENDATIONS

This study has resulted in a draft truck route ordinance which designates certain major streets in Berkeley to be used by trucks weighing more than seven tons. Trucks over seven tons would be prohibited from using all other streets, except when it is necessary to reach a destination for loading or unloading. The complete text and accompanying map of the proposed truck route ordinance are presented in Chapter II of this report.

Other recommendations pertaining to this study are discussed below:

COMPATIBILITY WITH EXISTING ORDINANCES

It is recommended that the existing truck prohibitions, Sections 14.2 and 14.3 of the Berkeley Traffic Ordinance, be maintained. The extremely steep grade of Marin Avenue between Grizzly Peak Boulevard and The Circle (16 percent), and the recreational nature of Aquatic Park are reasons to keep the more restrictive four ton truck prohibition.

ENFORCEMENT OF REGULATIONS

It is recommended that the proposed ordinance be advisory for an introductory period of six months after which time it would become punitive. Such an advisory period will allow time for an education process and assist in maintaining the goodwill and cooperation of the trucking industry.

Enforcement would pertain to those vehicles travelling through on a prohibited street, without a destination in the immediate area. The state vehicle code exempts trucks with destinations on a prohibited street, allowing the use of that street and other prohibited streets leading from the nearest truck route. Also exempt are vehicles owned by a public utility or a licensed contractor while in use for the maintenance of a public utility.

SIGNING

Adequate signing will aid truck drivers, improve compliance with the ordinance and aid in enforcement. It is recommended that uniform signing be placed at the following locations:

- o Intersections of truck routes
- o At regular intervals along the truck routes
- o At entry points into the City

Uniform truck route signs may be available from Alameda County which also has a seven ton weight limit.

In addition, informative signs are recommended for Ashby Avenue in the eastbound direction. The signs should inform truck drivers that Route 13 southbound is not recommended for through travel. At least one sign should be posted prior to Telegraph Avenue and another posted at the beginning of Tunnel Road.

Placing the truck route signs on the two state highways in Berkeley will probably be the City's responsibility. An encroachment permit must first be secured from CALTRANS for this to be done.

FUTURE FOURTH STREET TRUCK ROUTE

The Berkeley Circulation Plan designated Fourth Street as a collector street to divert truck traffic using Sixth Street and reduce the impacts on the adjacent residential neighborhoods. We considered designating Fourth Street as a truck route to further enhance its attraction to truck drivers. However the present condition of Fourth Street precludes its designation as a truck route at this time. It is recommended that Fourth Street be considered for future designation as a truck route in order to reduce the number of trucks using Sixth Street. To function as a truck route Fourth Street would require upgrading with signalization of intersections, removal of parking and improved pavement.

NEED FOR AN ENVIRONMENTAL ASSESSMENT

It is recommended that an environmental assessment be conducted regarding the proposed truck route ordinance. The environmental checklist completed for this study indicates that environmental impacts may occur in the areas of noise, transportation/circulation, and public services. It was not possible within the scope of this study to fully assess the impacts of implementing a truck route ordinance. The analysis of truck diversion from prohibited streets to the designated truck routes requires additional data.

CHAPTER II
RECOMMENDED TRUCK ROUTE ORDINANCE FOR THE CITY OF BERKELEY

ARTICLE XVIII: RESTRICTED USE OF CERTAIN STREETS

Section 18. Truck Routes

(a) Whenever any ordinance or resolution of this City designates and describes any street or portion thereof as a street, the use of which is permitted by any commercial vehicle or by any vehicle exceeding a maximum gross weight limit of seven (7) tons, the Traffic Engineer is hereby authorized to designate such street or streets by appropriate signs as "truck routes" for the movement of commercial vehicles or by vehicles exceeding a maximum gross weight limit of seven (7) tons.

(b) When any such truck route or routes are established and designated by appropriate signs, the operator of any commercial vehicle or any vehicle exceeding a maximum gross weight limit of seven (7) tons shall drive on such route or routes and none other, except when necessary to traverse another street or streets to a destination for the purpose of loading or unloading, but then only by such deviation from the nearest truck route as is reasonably necessary.

(c) The provisions of this section shall not apply to: 1) passenger buses under the jurisdiction of the Public Utilities Commission, or 2) any vehicle owned by a public utility or a licensed contractor while necessarily in use in the construction, installation, or repair of any public utility or 3) refuse collection vehicles.

(d) Those streets and parts of streets established by resolution of the Council are hereby declared to be truck routes for the movement of vehicles exceeding a maximum gross weight of seven (7) tons:

1. San Pablo Avenue between the Albany City limits and the Oakland City limits.
2. Solano Avenue between the Albany City limits and the Circle.
3. Sutter between the Circle and Eunice.
4. Shattuck Avenue between Eunice and Ward Street.
5. Adeline Street between Ward Street and the Oakland City limits.
6. Telegraph Avenue between the Oakland City limits and Haste Street.
7. Gilman Street between San Pablo Avenue and I-80.
8. Hearst Avenue between Shattuck Avenue and Gayley Road.
9. University Avenue between I-80 and Oxford Street.
10. Haste Street between Shattuck Avenue and Telegraph Avenue.
11. Dwight Way between Shattuck Avenue and Telegraph Avenue.
12. Ashby Avenue between I-80 and the Oakland City limits.

Section 18.1 Prohibition of Commercial Vehicles

(a) Commercial vehicles exceeding seven (7) tons are prohibited on all streets except those listed in Section 18(d). Commercial vehicles exceeding seven (7) tons may use streets other than those designated in Section 18(d) at those times when it is necessary for said vehicle to travel on said streets for the sole purpose of reaching a destination for loading or unloading, provided that the route of travel on said street is the shortest deviation from the nearest truck route.

Section 18.2 Interstate Truck Terminal Routes.

(a) Purpose. This Article is enacted to exercise the local options authorized by California Vehicle Code Section 35401.5, subd. (b).

(b) Designation of Routes. Upon receipt of a written application by a terminal operator, the Traffic Engineer is authorized to designate a route between an interstate highway and a terminal as an interstate truck terminal route.

For the purpose of this Article, "interstate highway" shall mean a portion of the National System of Interstate and Defense Highways, or of any federal-aid primary highway qualified by the United States Secretary of Transportation for such use, limited to, Interstate 80 within the City limits.

"Terminal" shall mean a facility at which freight is consolidated to be shipped and where full-load consignments may be offloaded, or at which combinations of vehicles consisting of a truck tractor and semitrailer, or of a truck tractor, semitrailer, and trailer, are regularly maintained, stored or manufactured.

(c) Written Application; Contents. The written application shall include:

1. Name, address and business title of the applicant;

2. Location of the terminal by street address or other appropriate description;
3. Preferred route, listing street names and intersections;
4. Alternate route, if appropriate;
5. Statement that terminal provides facility for consolidation of freight to be shipped; or loading and off loading of full load consignments; or maintenance, service or manufacture of interstate trucks;
6. Statement that terminal parking and terminal entries are adequate for interstate trucks; and,
7. Statement of other considerations that applicant believes need resolution, such as potential problems of street width or intersection arrangements.

(d) Applicant Review. The Traffic Engineer shall review the application to determine if a route may be designated which meets local concerns, including adequacy of road geometrics and public safety.

If the Traffic Engineer determines that the proposed route is satisfactory, the route designation shall be forwarded to the City Council. The Council shall adopt the designation by resolution, or deny the same. If the designation is adopted, the route

designation shall be forwarded to the local District Office of the State Department of Transportation for review. A letter of concurrence in the route designation must be received from the State before appropriate signs identifying the route may be installed by the City.

If the proposed route is determined to be unsatisfactory a written notice of denial shall be sent by the Traffic Engineer applicant. The notice shall identify the reason(s) for denial, and possible means, if any, whereby the objectionable features can be remedied.

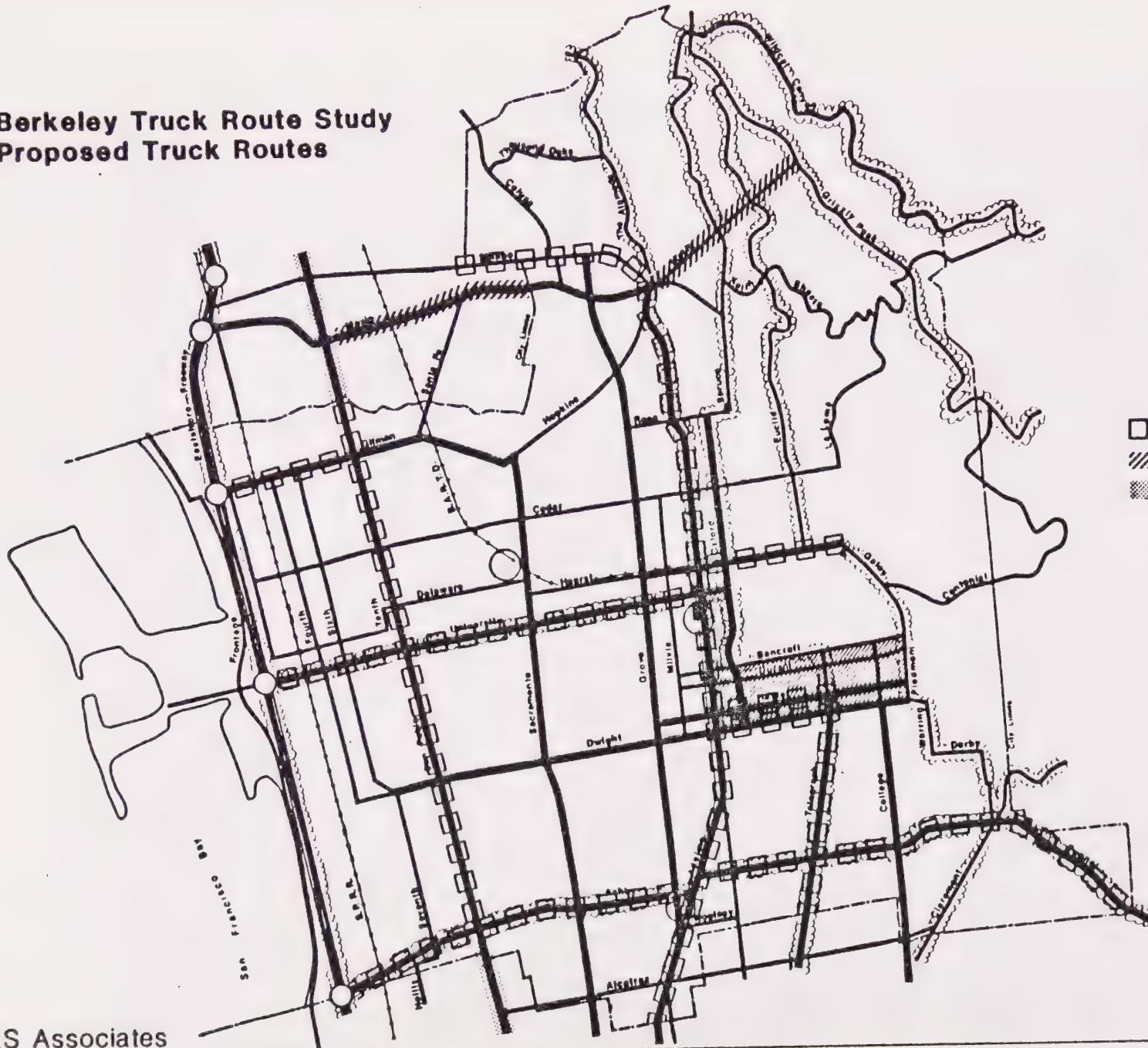
(e) Revocation. If the Traffic Engineer determines that a previously designated route is unsatisfactory, either due to error in the original designation or to changes in conditions, he shall send a written notice of revocation to the applicant. The notice shall identify the reason(s) for revocation, and possible means, if any, whereby the objectionable features can be remedied.

(f) Appeal. In the event of the denial or revocation of a route designation by the Traffic Engineer the applicant may appeal to the City Council for reconsideration. The Council reserves the right to reverse a decision of the Traffic Engineer and to approve the designation of a route as an interstate truck terminal route.

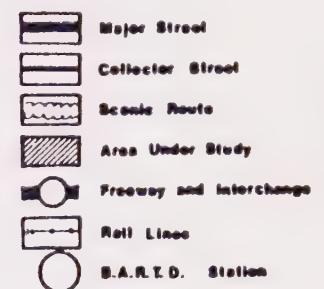
(g) Costs. No applicant shall be charged any costs attributable to application review, or to the placement, maintainance and replacement of route signs.

The Traffic Engineer shall consider on a case by case basis any proposal by an applicant to contribute funds to bring an unsatisfactory route up to acceptable standards by means of repair or construction.

Berkeley Truck Route Study Proposed Truck Routes



Legend



- □ Proposed Truck Routes
- ▨ Existing Truck Prohibitions
- ▨ Existing Truck Routes



Prepared by the Comprehensive Planning Department, City of Berkeley
CIRCULATION PLAN
Berkeley Master Plan

CHAPTER III STUDY BACKGROUND AND INVENTORY OF EXISTING CONDITIONS

INTRODUCTION

The City of Berkeley serves as a major educational center and location for a number of manufacturing plants. The City is served by a major transcontinental highway (Interstate 80) and by Southern Pacific freight rail service. Each day the highest volume street in Berkeley (University Avenue) may carry up to 37,000 vehicles, of which between 10 and 20 percent may be trucks. The heavier trucks which draw complaints from residents for noise or speeding may constitute over 3 percent of vehicle traffic.

Trucks are vital for Berkeley, as they are to most cities, as the amount of freight moving by truck has increased. Residential areas as well as manufacturing centers are dependent on trucks for the movement and delivery of goods, as well as the provision of services such as refuse removal and fire protection. Unfortunately, the number and size of trucks operating in some residential areas has combined to create serious problems of noise and other disturbances.

The problems now experienced can be reduced somewhat by regulating the operation of the heavier trucks most likely to cause the problem.

While these neighborhoods could have been addressed individually a comprehensive study was proposed to consider all of the residentially zoned areas of the City. The scope of the study also included the commercial and manufacturing zones of the city. Considering both commercial and residential areas produces a reasonable and coherent truck route system for the entire City.

This report describes the methodology, findings, and recommendations of the Berkeley Truck Route Study. The study had two principal objectives:

1. To designate a truck route network which would serve the needs of commerce and industry, while at the same time minimizing the adverse effects on residential neighborhoods.
2. To prepare a draft truck route ordinance designating truck routes within the City.

The work of the study involved data collection, analysis and solution development. Data collection included field reconnaissance, classification counts, an examination of current truck regulations in Berkeley, a survey of regulatory practices in other cities, a detailed literature search, and input from trucking companies and associations.

BACKGROUND

The current study stems most directly from complaints of residents in the Cedar Street area, between San Pablo Avenue and Shattuck Avenue. In July 1982 a number of residents attending a public hearing (concerning AC Transit bus service on Cedar Street) complained of large trucks making noise and speeding. A city staff memorandum concerning the issue suggests that much of the problem was due to trucks servicing the CO-OP stores on Shattuck Avenue at Cedar Street.

In response to these complaints the Berkeley Public Works Department prepared an analysis of the issue, including traffic counts of vehicles and trucks on Cedar Street. A truck route ordinance was later drafted but found unsatisfactory.

EXISTING LAND USE

The City of Berkeley is comprised of 6,500 acres of land, with 3,790 zoned for residential use, 330 zoned for commercial use and 435 zoned for industrial use. Unclassified areas including streets, recreational and educational uses total 1,950 acres.[1] Figure 1 illustrates those land uses which could be sensitive to truck traffic. The areas which are not shaded indicate commercial and industrial development.

The Census lists over 300 manufacturing plants in the Berkeley and Albany census division. Industrial and manufacturing uses in Berkeley are concentrated in the area west of San Pablo Avenue. This area is adjacent to I-80 and is served by three interchanges. The nearby freeway access reduces the need for heavy trucks to travel through Berkeley.

Commercial development is concentrated in corridors along Telegraph Avenue, Shattuck Avenue, San Pablo Avenue, and University Avenue.

The resident population of Berkeley was 103,000 in 1980 or 27 residents per residentially zone acre of land.

EXISTING TRAFFIC CONDITIONS

The Berkeley Master Plan sets forth policies relevant to the movement of goods in Berkeley. Policies 2.90, 2.91, 2.92 and 2.93 are presented below:

- 2.90 Encourage trucks to use streets in industrial and commercial areas.
- 2.91 Limit to the extent possible the movement or parking of trucks in residential areas.
- 2.92 Prevent delivery vehicles from impeding transit and/or other transportation services.

Figure 1



2.93 Establish truck routes which reduce, as much as possible, truck use of residential streets.

The Transportation Element of the Master Plan identifies major streets, collector streets, freeways and scenic routes in Berkeley. Major streets are high-volume streets connecting areas of the city and adjoining communities. Collector streets usually carry lesser volumes and connect local streets, major streets and activity centers in Berkeley. A study of the area south and west of the University of California campus was underway when the Master Plan was written. To date no substantial changes have been made to the circulation Plan based on the findings of this study.

Two of Berkeley's main streets are state highways. San Pablo Avenue is State Highway 123 and Ashby Avenue is State Highway 13.

The last comprehensive traffic counts for the City of Berkeley were done in 1977. These counts are still considered by City staff to provide a good representation of traffic conditions occurring in 1985.

During the course of this study, classification and total traffic counts were taken at eight locations in Berkeley. Classification counts collect data on the number of different types of vehicles using a roadway. In this case data was collected in nine categories. Two hour counts were taken during the AM and PM periods corresponding to the peak travel times for trucks.*

Table 1 summarizes the classification counts based on vehicle type, and number of axles. Based on our observations University Avenue at over 3 percent has the highest percentage of trucks over five tons.

TRUCK TRAFFIC

Definitions

Trucks are classified into the categories of light, medium, light heavy, and heavy trucks corresponding to the weight of the vehicle and the number of axles. The four classes are described below:

Light Trucks-two axles, four tires, Gross Vehicle Weight of under 10,000 lbs. (Example: pick-ups, small vans, small United Parcel Service vans, mail trucks.)

* Unlike automobile travel patterns, truck activity varies little throughout the week.

BERKELEY TRUCK ROUTE STUDY
Summary of Truck Classification Counts

Location	4 Tires	6 Tires or More								Total Vehicle
		Single Unit			Semi Trailers		Double Trailer		Exempt Vehicles	
	Pick ups	Small Vans	Autos	2 Axles	2 Axles	3 Axles	3 Axles	4 Axles	5 Axles	Buses Garbage Trucks Public Utilities
	Under 10,000 GVW	10,000 to 14,000 GVW	14,000 to 26,000 GVW	More than 26,000 lbs. GVW						
June 6, 1985 10 AM - 12 PM										
University near San Pablo	4,122	38	15	6	22	1	68	1	42	4,315
1 PM - 3 PM										
San Pablo near Chaucer	2,373	27	26	12	11	2	1	0	17	2,469
June 7, 1985 10 AM - 12 PM										
Shattuck near Parker	4,292	25	25	12	11	1	3	0	46	4,415
Martin Luther King near Derby	1,942	10	10	4	3	0	1	1	19	1,990
1 PM - 3 PM										
Marin near Martin Luther King	1,875	10	11	6	0	0	0	0	26	1,928
Ashby near Martin Luther King	3,800*	22	22	14	5	3	2	1	22	3,891
Telegraph near Ashby	2,748	12	11	6	7	0	1	0	15	2,800
Cedar near McGee	1,161	9	9	5	0	1	0	0	15	1,200

GVW - Gross Vehicle Weight

* City of Berkeley, 1984 Fuel Efficient Traffic Signal Study

Medium Trucks-two axles, six tires, Gross Vehicle Weight between 10,000 and 19,500 lbs. (Example: flat bed truck, large tow truck, package delivery van.)

Light-Heavy Trucks-two axles, six tires, Gross Vehicle Weight between 19,500 and 26,000 lbs. (Example: moving van, armored car, school bus, beverage truck.)

Heavy Trucks-two or more axles, six or more tires, Gross Vehicle Weight greater than 26,000 lbs. (Example: transit bus, fire truck, dump truck, tractor/trailer.)

Table 2 provides a complete description of these truck classifications. The weights of typical heavy trucks are described in Table 3.

Trucks Operating in Urban Areas

To provide perspective on the operation of trucks in Berkeley it is useful to look at how trucks operate generally in urban areas. Most urban truck trips (68 percent) are made by light trucks that travel an average of 1.6 miles per trip and a total of 28 miles per day. Medium trucks comprise 28 percent of urban truck trips and light-heavy and heavy trucks make up the remaining 4 percent.[2] In general, while light trucks operate primarily within cities and within all areas of cities, heavy trucks operate between cities and primarily within the industrial areas of cities.

Different land uses attract varying percentages of truck trips. Residential land generates 40 percent of all truck trips, followed by commercial (25 percent), trade/wholesale (25 percent) and manufacturing (6 percent).

Overall, trucks account for 15 percent of all vehicle trips. Of these trips 70 percent are local trips and 30 percent are through trips. The total number of trips generated by a city is related quite closely to the number of developed acres. Between 1.6 and 1.8 truck trips are generated per developed acre.[3] With 6,500 developed acres Berkeley generates between 10,400 and 11,700 truck trips each day.

EXISTING REGULATION OF TRUCK MOVEMENTS

Truck Routes and Truck Prohibitions

Existing regulations pertaining to truck prohibitions and the carrying of hazardous cargos were reviewed for Berkeley. A summary of these regulations is presented below:

Table 2
TRUCK CLASSIFICATION

<u>Descriptive Size</u>	<u>Class</u>	<u>Gross Vehicle Weight (Pounds)</u>	<u>Number of Axles</u>	<u>Number of Tires</u>	<u>Representative Vehicle</u>
Light	1	< 6,000	2	4	Pick-up, Van
	2	6,000 - 10,000	2	4	Step Van, Mail Truck, Small UPS Van
Medium	3	10,000 - 14,000	2	6	Metro Van, Small Tow Truck
	4	14,000 - 16,000	2	6	Flat Bed
Light-Heavy	5	16,000 - 19,500	2	6	Large Tow Truck, Package Delivery Van (UPS) Stake Truck
	6	19,500 - 26,000	2	6	Single Unit Truck (30'), Moving Van, Beverage Truck, Home Heating Oil Truck, Armored Car (Brinks) School Bus, Mini-Bus
Heavy	7	26,000 - 33,000	3	10	Tractor/Trailer (40'), Moving Truck, Fire Truck, Dump Truck, Transit Bus
	8	> 33,000	3	10	Tractor/Trailer (50'), Moving Truck, Freight Trucks, Concrete Truck, Gravel Truck, Articulated Transit Bus, Greyhound Bus

Source: DKS Associates

"Urban Transportation Planning for Goods and Services",
U.S. Department of Transportation, FHWA, Washington, D.C.,
June 1979.

Table 3
HEAVY TRUCKS

<u>Truck Type</u>	<u>Typical Gross Vehicle Weight (pounds)</u>	<u>Number of Axles</u>	<u>Number of Tires</u>
Moving Van (single unit 30')	20,000	2	6
Moving Truck (T/T 40')	30,000	3	10
Moving Truck (T/T 50')	40,000-60,000	4	14
Transit Bus	33,500	2	6
Articulated Transit Bus	48,000	3	10
Fire Truck (single unit) (T/T)*	31,800 51,000	2 3	6 10
Garbage Truck	50,000	3	10
Concrete Truck	62,000-66,000	3	10
Freight Trucks (single trailer)**	35,000-40,000	3	10
Freight Trucks (double trailer)	80,000***	5	18
Gravel Trucks (dump truck)	25,000-30,000	2	6
Gravel Trucks (semi-unit)	45,000-49,000	3	10
Gravel Trucks (double trailer)	78,000-80,000**	5	18

* T/T = Tractor/Trailer

** Typical for city deliveries.

*** State of California gross weight maximum for any vehicle.

1. Berkeley: Sections 14.2 and 14.3 of Traffic Ordinance 3262-N.S. prohibit trucks over four tons from using Marin Avenue between The Circle and Grizzly Peak Boulevard, and Bolivar Drive in Aquatic Park.
2. Section 6 of the Berkeley Fire Code requires that vehicles containing flammable or combustible liquids, hazardous chemicals, liquefied petroleum gases or cryogenic fluids must have the approval to use any street east of San Pablo which is not a state highway.

Trucks with hazardous cargoes are expressly prohibited from using segments of six streets, including:

1. Shattuck Avenue between University Avenue and Dwight Way; and
2. Adeline between Ward and Stuart and between Ashby and Woolsey.

These street segments are adjacent to BART purge chambers.

Interstate Truck Operations

The 1982 Surface Transportation Assistance Act allowed the trucking industry to operate wider trucks on interstate highways. It also allowed for these trucks to have access to service centers within one-half mile of the interstate, with specific routes being approved by the communities through which these routes would operate.

The City of Berkeley currently has no regulations governing the operation of interstate trucks. These trucks are currently being operated by Consolidated Freightways at their terminal on 9th Street. Approximately 5 double tandem interstate trucks are serviced each weekday at the Consolidated Freightways terminal.

CHAPTER IV PROBLEM IDENTIFICATION

DEFICIENCIES OF EXISTING REGULATIONS

Sections 14.2 and 14.3 of the Berkeley Traffic Ordinance are deficient in that they control only two street segments. While additional sections could be added to ameliorate problems on other streets, the result would be truck controls which react to immediate problems. A comprehensive approach on the other hand can provide for greater control over truck movements by directing them to desired routes.

Section 6 of the Berkeley Fire Code may have limited authority to control hazardous cargoes. Legislation is currently pending in the California Legislature which would allow cities, along with the California Highway Patrol to restrict the movement of hazardous substances. Over 400 accidents involving hazardous materials occur on highways throughout the state each year according to the State Department of Transportation.[4]

There is currently no ordinance regulating the movement of the wider "Interstate Trucks", although these trucks are operating within Berkeley.

AREA SPECIFIC PROBLEMS

Although overall Berkeley is experiencing few problems with heavy trucks two specific areas of the City were identified where trucks are a problem.

The Berkeley Master Plan of 1977 reported few problems with heavy trucks operating in residential areas, except in the residential area west of San Pablo Avenue. This area is surrounded by industrial and commercial uses and the collector street (Sixth Street), which brushes by the west edge of this neighborhood, is a popular truck route. To overcome the problem the Transportation Element of the Master Plan established Fourth Street as a collector street to absorb some of the truck traffic now using Sixth Street.[3] This designation appears to have done little to reduce the number of trucks using Sixth Street. Field observations and interviews with trucking companies revealed that most trucks travelling in the area are continuing to use Sixth Street.

Since the Master Plan was written heavy trucks have become a problem on Cedar Street. Neighborhood concern was voiced at public hearings in 1982 and it is considered that trucks remain a problem on this street. An examination of truck counts taken by the City of Berkeley Department of Public Works and DKS Associates shows that medium and heavy trucks are operating on Cedar Street and constitute approximately 2 percent of total vehicle traffic. Trucks travelling on Cedar Street between San Pablo Avenue and Shattuck

Avenue are climbing up grade and this contributes to greater vehicle noise from acceleration.*

We are aware of no other neighborhoods experiencing significant problems with trucks.

INPUT FROM THE TRUCKING COMMUNITY

In addition to the Berkeley Master Plan and previous public hearings, input on the operation of heavy trucks in Berkeley was also sought from members of the trucking community: trucking companies based within and outside Berkeley, the national and statewide trucking associations, and the Teamsters Union.

Responses in the interviews indicated that trucking companies are facing few problems operating in Berkeley and none that relate to the routing of trucks. One operator mentioned that he has difficulty finding parking when making deliveries and another reported that double-parked cars hinder truck access to the terminal.

Trucking associations are opposed to truck route ordinances arguing that restrictions on truck operations increase the costs of operation. By correlation, the less restrictive the ordinance the less expensive is the trucking service to the community.

The local Teamsters Union, Local 70 does not object to an advisory truck route ordinance, but would object to an ordinance which imposed penalties.

FIELD RECONNAISSANCE AND DATA ANALYSIS

A major effort in the problem identification process was a thorough field reconnaissance of all of the problem areas described previously, as well as observations made on every major street in Berkeley which could potentially serve as a truck route. Data collected included street widths, steep grades, turning and height restrictions, poor pavement conditions, adjacent land uses and other factors related to the movement of commercial vehicles. Classification counts and total vehicle counts were taken at eight locations in Berkeley.

* Counts taken by the Berkeley Department of Public Works on Cedar Street in 1982 found 216 commercial trucks, utility trucks and buses and 5200 cars between the hours of 7AM and 6PM. Of the trucks counted 120 commercial trucks would be subject to regulation, 2 percent of the total vehicle traffic. The two hour count on Cedar Street taken by DKS Associates found 24 trucks over 10,000 lbs, 15 exempt vehicles (buses, garbage trucks, utility trucks) and 1161 cars, pick-ups, and small vans. The 24 trucks represent 2 percent of the total vehicle traffic for the two hour period.

Steep grades were identified on Marin Avenue and on Tunnel Road. Grade becomes important when it results in a reduction in speed of more than 10 MPH. Speed reductions of more than this greatly increase the number of accidents. It was determined that trucks using Tunnel Road would lose approximately 12 mph of vehicle speed in the ascent. Caltrans has erected a sign on Highway 24 warning truck drivers that Route 13 north is not recommended for through trucks. According to a Caltrans representative grade problems, as well as the number of accidents on Tunnel Road were part of the reason for posting this sign.[5]

Marin Avenue between Grizzly Peak Boulevard and The Circle has long been recognized as a hazard to heavy trucks and is one of only two street segments in Berkeley with a truck prohibition.

Turn restrictions were found at Sacramento and Hopkins. Large tractor/trailer combinations generally require a 45 foot turning radius which is not available for large trucks turning left from Sacramento. No height restrictions were found on the major streets. Most trucks are 13.5 feet high and generally a 15 foot clearance is provided.

Travel lanes of 10 feet were found on segments of College Avenue and Ashby Avenue. A width of 11 or 12 feet is preferred for urban arterials, with an added foot if higher volumes of heavy truck traffic are present.

Pavement condition was found to be generally good, although some parts of Fourth Street were in poor condition. The state vehicle code allows trucks with a Gross Vehicle Weight of 80,000 lbs. It was assumed that all major streets and collectors are currently carry trucks of this weight and have the load bearing capacity to continue to do so.

High vehicle and truck accident intersections correspond to the volume of traffic through the intersection. Examination of accident records for 1984 showed that the intersection of Ashby and Shattuck had the most truck accidents (5). Of the top ten accident locations for all vehicles, most were intersections of the major streets.

Vehicles carrying hazardous cargoes, especially flammable materials, are currently prohibited from certain segments of streets in Berkeley. These street segments parallel the purge chamber openings of the BART system. These street segments are not now identified by posted signs, but there are plans to do so.

CHAPTER V SOLUTION DEVELOPMENT

LIMITS OF TRUCK ROUTE ORDINANCES

An important factor influencing any truck route regulations is the limited nature of the restrictions that may be placed on truck movements. Unless there are special safety or structural reasons, legal motor vehicles cannot be excluded from using any public street in order to access the property abutting the street. There are a number of services that must have access to residential property on a regular basis such as garbage collection and goods delivery. Other trucks must have access but on an irregular schedule, such as construction equipment and moving vans.

SURVEY OF REGULATORY PRACTICES IN OTHER CITIES

The regulation of the movements of commercial vehicles has been a problem faced by a number of metropolitan areas in the Bay Area. In an effort to examine the practices of other cities, gain an insight into regulatory measures currently in force and provide compatibility with adjacent communities a review was made of existing ordinances regulating trucks. The ordinances of communities adjacent to Berkeley are summarized below:

Albany: Sections 20.89 through 20.90-4 of the Albany City Code refer to truck routes and truck prohibitions. Section 20.90-2 prohibits trucks over five tons from using Marin Avenue between San Pablo Avenue and the Berkeley City limits. Ordinance 78-013 raised the weight restrictions from the previous limits of between three and four tons to a uniform restriction of five tons. Although not listed in the ordinance San Pablo Avenue in Albany is posted as a truck route.

Oakland: Article 17 of the Oakland Traffic Code places restrictions on certain streets and highways, and establishes local and through truck routes. Section 189 places a weight restriction of four and one/half tons on restricted streets. Section 205 establishes local truck routes including San Pablo Avenue between the Berkeley City limits and the Emeryville City limits. For the purposes of Section 205 a motor truck is a motor vehicle over twenty feet in length "designed, used, or maintained primarily for the transportation of property."

Emeryville: Ordinance 81-09 restricts commercial vehicles over two and one/half tons from using certain residential streets, none interfacing with Berkeley.

Kensington: Contra Costa County is responsible for regulating truck traffic in this unincorporated city. The County has not set weight limits or designated truck routes in Kensington.

Ordinances of Concord, Hayward and Palo Alto were also reviewed, as well as the ordinances of Whittier, Thousand Oaks, Sonoma, and Davis.

The interstate truck ordinances of San Francisco and Sacramento were reviewed and are summarized below:

San Francisco-Article 17 of the San Francisco Traffic Code authorizes the designation of interstate truck terminal routes and establishes a procedure for their designation. A terminal is defined as a "facility at which freight is consolidated to be shipped and where full-load consignments may be off-loaded." Of particular concern are road geometrics as the wider trucks with a repositioned rear axle have a wider turning radius than other trucks.

Sacramento-Chapter 10.41 of the Sacramento Traffic Code is similar to the San Francisco ordinance and to the number of other city ordinances that have appeared since the "Interstate Trucks" were permitted.

ESTABLISHMENT OF POLICY GUIDELINES

As no accepted criteria exist to apply in evaluating the feasibility or desirability of designating truck routes it was especially important to establish policy guidelines that would provide direction for the study. Numerous working sessions were held with Public Works Department personnel during which policy guidelines were explored and developed.

Definitions: The first issue involved the determination of which vehicles would be regulated. Current regulations are based on weight and the limit is set at four tons. It was decided that the new regulation should continue to be based on weight, as using axle counts can be imprecise and lead to legal challenges.[6] The weight limit, it was agreed should be set at seven tons. A lower limit tends to affect many trucks which are relatively benign, that is their operating characteristics approximate those of the automobile. A lower weight limit could also present problems of compliance. In addition, a lower limit could divert more vehicles to the designated truck routes, reducing the capacity of these routes.

A limit which affects trucks seven tons and over would regulate those trucks which tend to create the most complaints from residents. These trucks are more likely to have the noisier diesel engine and braking and shifting sounds are also louder than smaller trucks. The operating characteristics of these vehicles also differ markedly from the automobile, with slower acceleration and wider turning distances.

Ordinance: The second major issue was to decide upon the type of ordinance to use. The current ordinance is a local one, without reference to the state vehicle code. It was decided the new ordinance should also be a local one with a six month introductory period during which time the ordinance would be advisory. An ordinance in accordance with Section 35701 of the state vehicle code would require pavement testing of each street to determine load carrying capacity.[7] Such testing would cost approximately \$1,000 per street and

would make prohibitively expensive the comprehensive approach which the City desires. The Palo Alto truck route ordinance is a local ordinance that was adopted in 1963 and has been upheld in court. There have been no recent court challenges.

A six month introductory period without penalties will allow time for the education process and help to maintain the goodwill and cooperation of the trucking industry.

Designation: The remaining issue was to determine the predominate criterion to be used in evaluating streets for designation as truck routes. It was decided that protection of residential streets and the maximum utilization of streets that have commercial frontage would be the leading consideration. Use of this criterion meant that some major streets such as Sacramento Street and College Avenue were not included because of their preponderate residential character.

NEED FOR ENVIRONMENTAL ASSESSMENT

The scope of this study did not allow for the full assessment of the environmental impacts stemming from a truck route ordinance. The Application for Environmental Study which was completed for this study and is attached to this report, indicates that environmental impacts may occur in the areas of noise, transportation/circulation, and public services. In particular, the analysis of truck diversion from prohibited streets to the designated truck routes requires additional data.

The proposed truck route ordinance, by prohibiting through trucks from routes they currently use, will cause diversion to the designated truck routes. It is possible to get some idea of the amount of diversion that will occur by examining the classification and vehicle counts taken during this study. Table 4 shows the number of trucks counted during a two hour period and the number of trucks projected to use that roadway in twenty-four hours. Assuming that 30 percent of the trucks are through trucks and subject to the proposed ordinance, possible reductions in truck trips for prohibited streets were computed and are listed in Table 4.

Using Cedar Street as an example, fifteen trucks over seven tons were counted during a two hour period. It is projected that ninety trucks over seven tons use Cedar Street during a twenty-four hour period. Of these ninety trucks it is possible that twenty-five would be diverted to other routes. If all twenty-five were to use University Avenue, this would represent a four percent increase in truck traffic on University Avenue. Other prohibited streets would also be adding trucks to University Avenue.

Table 4
BERKELEY TRUCK ROUTE STUDY
 Projections of 24-Hour Truck Volumes

Location	2 Hour Counts		24 Hour Projections		Possible Reductions in Truck Volumes Due to Ordinance	
	Total Trucks >10,000 GVW	Total Trucks >14,000 GVW	Total Trucks >10,000 GVW	Total Trucks >14,000 GVW	>10,000	>14,000
University near San Pablo	151	113	755	565	NA	NA
San Pablo near Chaucer	79	52	465	305	NA	NA
Shattuck near Parker	77	52	385	260	NA	NA
Martin Luther King near Derby	29	19	150	95	45	30
Marin near Martin Luthur King	27	17	160	100	50	30
Ashby near Martin Luther King	69	47	405	275	NA	NA
Telegraph near Ashby	37	25	220	145	NA	NA
Cedar near McGee	24	15	140	90	40	25

GVW - Gross Vehicle Weight

The number of trucks diverted from prohibited streets to designated truck routes may be minimized by Berkeley's existing Traffic Management Program. The protection of some residential streets through the placement of barriers and diverters has already limited many through trucks to the major streets.

DEVELOPMENT OF TRUCK ROUTE ORDINANCE

The previously described policy guidelines provided a basis for the development of a draft truck route ordinance and truck route network designed to reduce the adverse impacts of truck traffic within residential areas of Berkeley while serving the needs of the business and industrial community.

APPENDIX A

REFERENCES

References

- [1] Berkeley Department of City Planning, "Berkeley Facts," Berkeley, California, 1981
- [2] U.S. Department of Transportation, "Urban Transportation Planning for Goods and Services," Washington, D.C., June 1979.
- [3] Wilbur Smith and Associates, "Motor Trucks in the Metropolis," prepared for Automobile Manufacturers Association, August 1969,.
- [4] Benicia Herald, "Council Support for Restrictions," May 24, 1985.
- [5] Richard Giggling, California Department of Transportation, Telephone Conversation, June 12, 1985.
- [6] DKS Associates, "Valley Business Park," prepared for CPS, February 3, 1983.
- [7] Berkeley Transportation Commission, "Cedar Street Traffic Issues," November 16, 1982.

The additional appendices B, C, and D are too lengthy to be included in the Downtown Plan Committee's copy of the Truck Route Study, but can be examined at the Planning Department.

- Appendix B: Truck Route Ordinances
- Appendix C: Application for Initial Study
- Appendix D: Trucking Industry Contacts

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